

| SERIAL NUMBER | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|---------------|-------------|----------------------|-----------------------|
| 07/586,534 | 09/21/90 | SCHIMMEL | P MIT5261 |
| | | | EXAMINER |
| | | | YARBROUGH, A |
| | | | ART UNIT PAPER NUMBER |
| | | | 1807 |
| | | | DATE MAILED: 01/29/92 |

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☐ This application has been examined ☒ Responsive to communication filed on 10/21/91 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input checked="" type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1 - 13 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☐ Claims _____ are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with Informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☒ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received
☐ been filed in parent application, serial no. _____; filed on _____
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

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The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 1 and 3-5, 7, 8, 11, 12 are rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Endo et al, Shi et al, Park et al, Dreher et al and Badger et al.

Endo et al discloses the process of inhibiting protein synthesis by the hydrolysis of a phosphodiester bond on the 3' side of G-4325 which is a single-stranded loop 459 residues from the 3' end of 28S rRNA.

Shi et al disclose that in tRNA, the G3.U70 base pair in the amino acid acceptor helix acts as a determinant of alanine identity. See p. 3621.

Dreher et al teach that mutations in several locations result in large losses of adenylation activity. Note the Abstract of Dreher et al.

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Badger et al is cited to show the conventionality of using X-ray crystallography to determine the three-dimensional structures of RNA. Note the "Introduction".

In view of the above, it would have been obvious for one of ordinary skill in the art at the time of the invention to determine the three dimensional structure as taught by Badger et al and to determine the nucleotide sequence in the targeted ribonucleic acid that is critical to a function as taught by Endo et al., Shi et al and Dreher et al. Finally, it would have been obvious to then synthesis a compound which would bind specifically to the critical site since Park et al show that bound alanine tRNA synthetase protects seven consecutive phosphodiester linkages and other sites at specific locations in the three dimensional structure. These references do not recite "minor groove" by they do show or teach the importance of the location of the targeted sequences.

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to adequately teach how to make

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and/or uses the invention, i.e. failing to provide an enabling disclosure.

Applicant's arguments filed October 21, 1991, have been fully considered but they are not deemed to be persuasive.

The is no presentation of a best mode for carrying out the invention. For example, "Determination of tRNA recognition features by the chemical synthesis of tDNA substrates". It is stated that Roe et al, Science (1988), synthesized DNA, but there are no process steps, reaction parameters presented in the instant application. Discussion of the results of the method are given but no method steps.

207 The minimum energies for these structures are not given. How are they determined? How does one determine that the X-ray crystal structures are of the same three-dimensional structure in solution? How does one make a crystal? It is necessary to include the program for modeling the RNA structure since the program under the names CHARMM and QUANTA may change over the years.

Claims 1-13 are rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth in the objection to the specification.

Claims 1-10 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

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regards as the invention.

It is not clear what the function of the bound compound is since binding is not necessarily inhibiting as shown by Park et al.

Yarbrough/LG
January 15, 1992
January 17, 1992

AMELIA BURGESS YARBROUGH
PRIMARY EXAMINER
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